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# Rock Creek Nature Trail



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Forest  Service

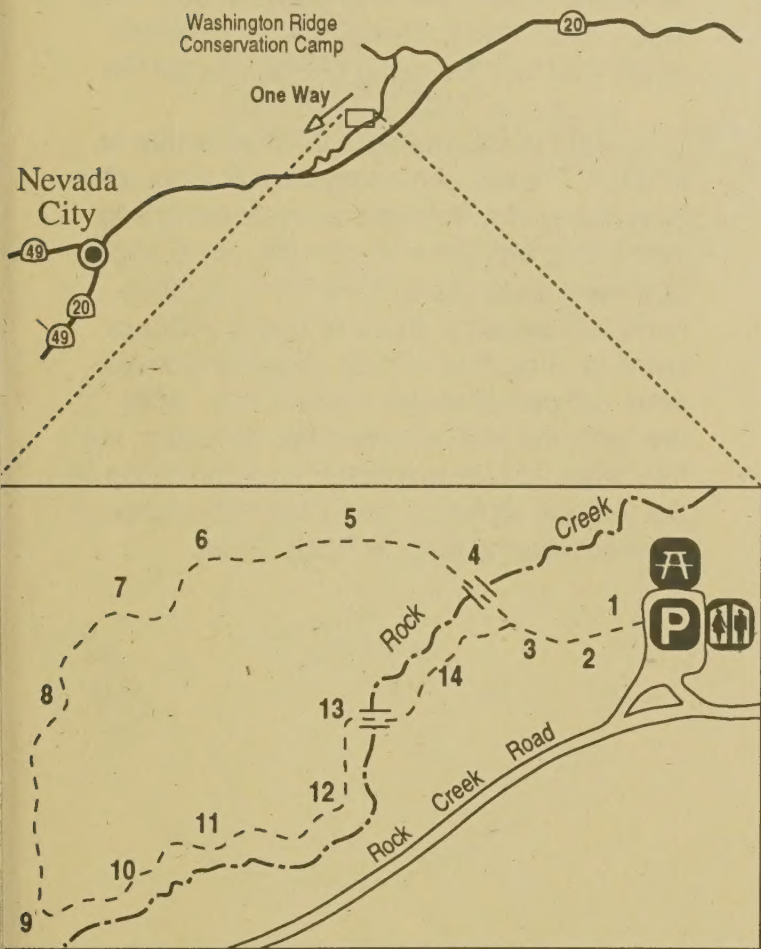
United States Department of Agriculture





## How to get there:

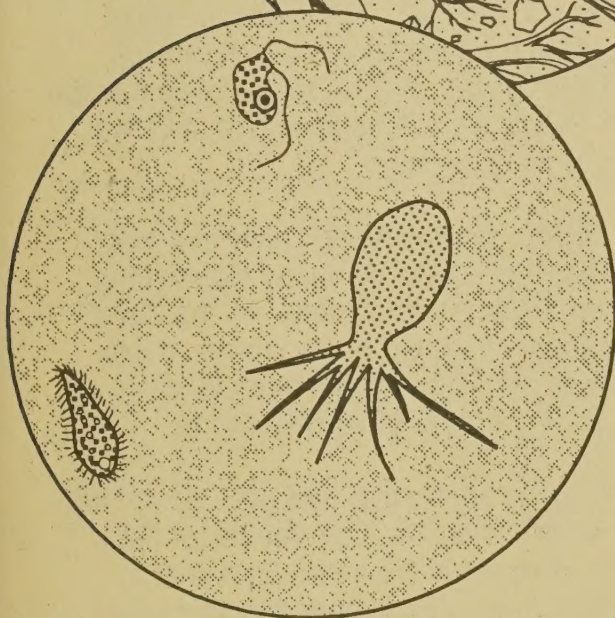
Drive east from Nevada City about 6 miles on Highway 20. Look for the Washington Ridge Conservation Camp sign on the left. Turn in here and follow the paved road for 1 mile. Turn left onto a gravel road that will take you another mile down into the canyon and parking lot. On the way out, follow the one-way road down canyon which brings you back to Highway 20 near the Five Mile House.



## **Welcome to Rock Creek Nature Trail**

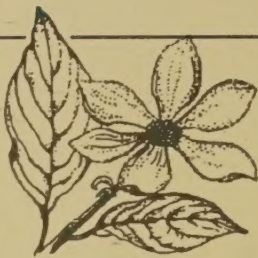
The 3/4-mile loop trail is mostly cool, shady, and level. Use this guide in conjunction with the numbered stops along the way to learn and explore the diverse ecosystems found here. Many of the stops ask you to become involved in discovery and learning activities. Stop often to enjoy your surroundings. The forest invites you to look, listen, smell, and feel the many kinds of forest life.

The overall theme of this trail is that of ECOSYSTEMS. An ecosystem is a complex community of plants and animals living and interacting with the soil, climate, air, sunlight, and water systems around them. Ecosystems can be large (the size of the earth) or small (a cubic foot of soil). Smaller ecosystems are part of larger ecosystems. After you walk the trail and read this brochure, we hope that you have a better understanding of the various elements and interrelationships in the ecosystems here at Rock Creek.



Smaller ecosystems  
are part of larger  
ecosystems.





Dogwood



Hazelnut

Bigleaf  
Maple



**1.** As you start the trail, look around at the trees. Note the fuzzy leaves of the hazelnut, the smooth leaves of the dogwood, and the hand-shaped leaf of the maple. Using the pictures in this brochure, can you find each one along the trail? Trees are an important part of many ecosystems. They shelter the ground by providing shade and help hold the soil in place. They provide cover for different insects and animals. Trees depend upon sunlight to produce sugars which provide energy for growth and for the animals that eat them. Plants are the beginning of the food chain in an ecosystem.

Bigleaf maples grow mainly in areas such as Rock Creek on shady slopes or in riparian areas (streamsides). As the days grow shorter in autumn, the bigleaf maple becomes the most colorful tree along the trail, turning a brilliant yellow-orange.

**2.** Find the stump that tells how old the tree was when it was cut. Can you count the rings? How old is the tree? One year's growth is marked by a dark ring and a light ring. The light ring is formed early in the growing season and the darker ring later on. When did the tree grow more quickly - at the beginning of its life or later on? How can you tell? How could a cross section tell us about the history of an area?

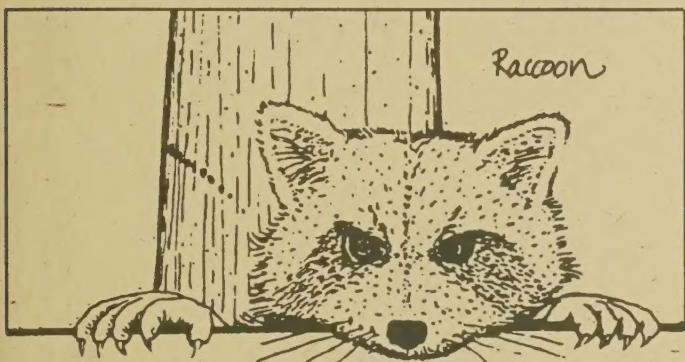


Banana Slug



As you walk to the next stop, watch for banana slugs. The slime produced by the slugs protects them from drying out. They line their burrows with it. It also helps them find their way back to the burrows and makes it difficult for predators to eat them. Watch for slugs along the cooler portions of the trail.

Raccoon



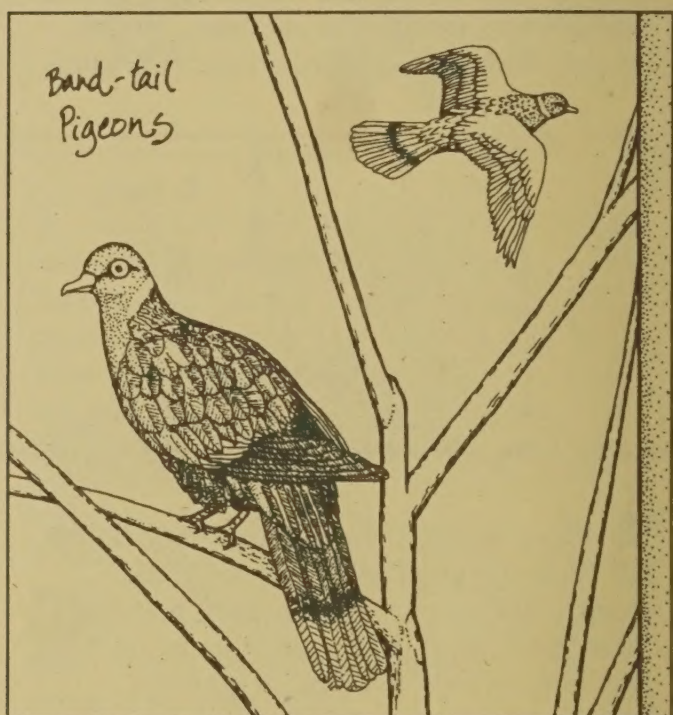
**3.** Examine the green, mossy stump on the left. What do you think might live in the stump? Raccoons, woodpeckers, and many other insect eating birds are often found living in or near stumps like this. In addition, standing dead trees, called snags, are important as they provide similar wildlife habitat. The Forest Service tries to maintain several snags per acre. Can you spot a snag?

Streamside areas are especially important for wildlife. They offer cool temperatures, a source of water, and a greater food source. What animals might you find along this stream? Look for their signs as you walk the trail.

**4.** Look into the water. The water from the National Forest is not only important to the animals here at Rock Creek, but also to those of us who live downstream. Rock Creek feeds into Lake Vera in Nevada City and then into the South Fork of the Yuba River where it is used for recreation, irrigation, power generation, and drinking water.

The large, rusty pipe in the creek was once the culvert under the bridge. Logging wagons and later tractors crossed the bridge carrying loads of logs to the mill.

**5.** Look up at the tree canopy and to the big madrone tree south of the trail. Madrones have reddish bark and broad green leaves. Can you find the madrone? In the fall this tree produces reddish-orange berries which attract many animals and birds including gray squirrels, robins, or band-tail pigeons.

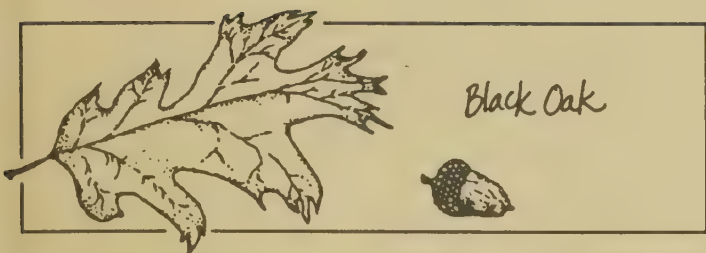


Take one minute and listen silently to the sounds of the forest. What do you hear?

Are the sounds of birds or animals coming from the tops of the trees or close to the ground? Many species of birds are either found in the tree canopy or on the forest floor. Their position in the tree may tell you about their niche or specific needs within a habitat. Many kinds of animals can live in the same habitat, but rarely in the same niche.

In the spring and summer, listen for the loud drumming of the pileated woodpecker, who nests in large, dead trees. They are the largest woodpecker in the area and can be spotted by their flaming red crest and black body.

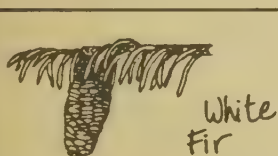




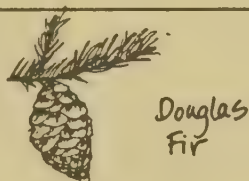
Black Oak

**6.** Look for the black oak tree with the scar. Black oaks are an important element in the mixed conifer zone. They produce an abundance of acorns, important for a variety of wildlife including squirrels and mule deer. Because of its importance in the ecosystem, efforts are being made to protect and maintain these deciduous trees throughout the National Forest.

Study the lichens and mosses on the oak's bark. Lichens are the thinner, gray-green patches. Lichens are composed of two different organisms, algae and fungi. The green algae photosynthesizes and produces food, while the fungi provides the support and water. Lichens are the slowest growing of all plants, some gaining only an inch in diameter in ten years. The thick dark green mats are mosses. Is it true that mosses and lichens are found mainly on the north side of a tree? Can you think of a reason why this might be so?



White Fir



Douglas Fir



Ponderosa Pine



Cedar

**7.** Notice the variety of trees in the area. Ponderosa pine, incense cedar, white fir, and Douglas fir are the predominant conifer species along this trail in the mixed conifer ecosystem. Ponderosa pine and Douglas fir need substantial amounts of sunlight to grow, while white fir can thrive in shade. Both ponderosa and Douglas fir are important sources of lumber.



Ponderosa can be identified by its 3 long (4-8 inches) needles per bunch. Douglas fir needles are short and not in bunches. White fir needles are also short and look more ordered than the those on the Douglas fir. Incense cedar has flat, segmented, fan-like needles.

Also notice the short shrub with feathery green leaves. It was called mountain misery by the pioneers who had to struggle to keep their wagon wheels from getting caught in the branches. It is also known as bear clover or kitkedizze. On a warm summer day, can you smell its aroma?



*Mountain  
Misery*

As you walk to the next stop, can you find a ponderosa pine, an incense cedar, a white fir, and a Douglas fir?

**8.** The largest trees along the trail range from 85 years to 200 years old. These trees will continue to live until disease, insects, decay, or fire cause them to die. Forest ecosystems are always changing. As old trees die, spaces are created for seedlings to grow. Most of the trees here are at least second or even third generation trees.

Air quality also plays a key roll in ecosystems. One of the difficulties that ponderosa pines have near populated areas is ozone damage. Ozone causes discoloration in the needles which reduces their ability to photosynthesize and weakens the tree. An ozone monitoring station is located about 5 miles east on Highway 20. Samples of vegetation are taken once a year by foresters and data sent to research scientists in southern California.

Find the remains of an old cabin. Archeologists estimate that the cabin was built

after the turn of the century. They suspect that the cabin was connected with timber harvesting in the 1920's - 1940's. The clearing to the right of the cabin is known as Old Man Marsh's Potato Patch and was used to grow vegetables for the men that worked at the Marsh Mill in the 1880's and 1890's.

Before you walk to the next stop, notice the air temperature. Is it hot, warm, or cool?

**9.** At this bend there is a wide spot to do some exploring of forest soils. Find an untrampled spot away from the trail. Gently poke your finger into the dirt. How does the soil feel? Smell? Pick up some soil and look at it in your hand. What is it made of? In good, productive soil here at Rock Creek, water and air make up about half of the soil volume while the other half is made up of minerals and leaf matter.

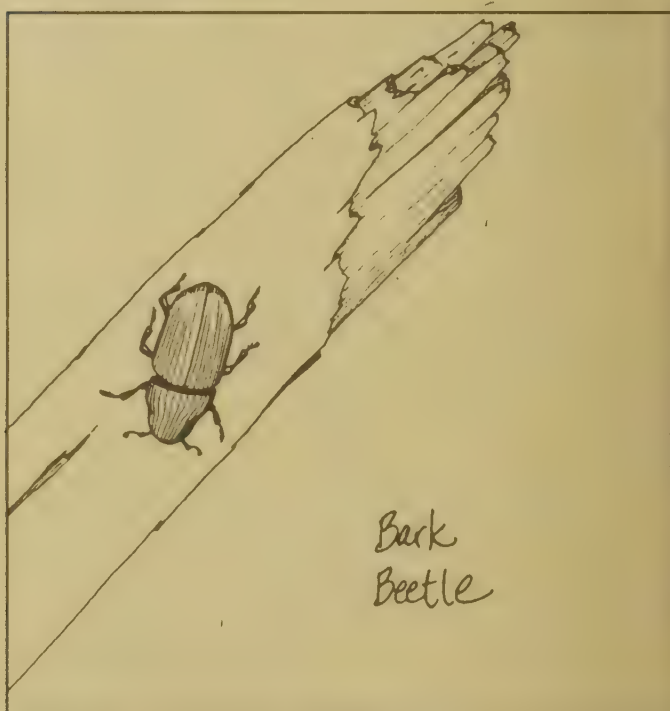
Now try to poke your finger into the soil on the trail. Does it feel different? The soil on the trail has been compacted by hikers over many years. When soil is compacted it makes it very difficult for trees and plants to grow well. Protecting forested sites from compaction is important since soils are the foundation of a healthy ecosystem. Are there some areas where soil compaction is OK?

The soil is one of the most diverse ecosystems found on earth. Scientists have identified over 3,400 different insects that live in soil in forests like this. With each step you take, you may be walking on 1,000 tiny mites, insects, and "microspiders". These invertebrates are critical to soil formation as they eat and digest leaves, needles, and woody material. Fungi and bacteria also assist in this decomposition process. It may take 35 years or more to build up one inch of organic soil. Because it takes so long to build up rich soil, reducing erosion is very important to us all.

As you walk to the next stop, see if you can find 2 grinding holes in the rock near the trail. These are thought to have been created by the Maidu Indians within the last 1500 years to grind acorns.

**10.** The remains of this small cabin are thought to be connected with the logging that occurred after the turn of the century. Lumber from the area built many of the original homes in Nevada City and the timber provided poles for the telephone line from Nevada City to Auburn as well as the local mines. Early pioneers and Native Americans used the Rock Creek area to provide materials needed in their lives. Thus the ecosystems here in the forest have been affected by human habitation and will continue to be, as we use and enjoy the trail.

**11.** A living tree provides habitat for multitudes of organisms. When a tree dies, its usefulness continues as the wood slowly decomposes over a period of 75 - 400 years. As a tree rots, generations of different insects pass through. They chew and digest the woody material which is released back to the environment and enriches the soil. Fungi also help to decompose the dead wood. Different types of fungi consume different chemicals in the wood.



Bark  
Beetle

As you walk to the next stop, see if you can find a once living tree that is almost soil. Can you find any insects living there? One decomposing log can be considered a small ecosystem.





*Pacific  
yew*

**12.** The tree with the shaggy bark and the small needles is a California yew. The yew grows in moist, shady areas. The wood is sturdy and flexible and was prized by Indians for making hunting bows. Taxol, a chemical found in the bark and other parts of the tree, has recently been found helpful in treating certain types of cancer. The Forest Service is working with the medical community to provide yew bark for the production of taxol, while also maintaining the yew as an important tree in these riparian areas.

Choose a tree and stand beneath it. Imagine what it would be like for "yew" to be a tree. Feel your long roots growing into the ground. They help anchor you. Stretch your branches out and up towards the sun so that your leaves and needles can use the light to make sugars. Take a deep breath of carbon dioxide in the air to help make food. Now send the sugar back down through your branches and trunk to your roots and store it there. You will need it for the winter. Using the tiny root and fungal hairs that extend from your roots, begin to absorb water and nutrients. Now pump the water up your trunk. You have the most efficient pump on earth and can lift hundreds of gallons of water every day. Pump the water out through your branches and leaves where it will evaporate, sending moisture and oxygen into the forest.

How did it feel to be a yew?

**13.** As you cross the bridge, can you see any insects or fish that live in the water? These are part of the aquatic ecosystem. Look for snails, caddisfly larva, or brown trout near the bottom of the creek. Swimming just under the surface of the water, you may find backswimmers or tadpoles. On the surface, look for water striders or whirligig beetles. These animals have developed special adaptations to help them survive. Fish can "hear" through the lateral stripe that extends down each side of their body which picks up vibrations in the water. What other adaptations help fish survive in the aquatic environment?

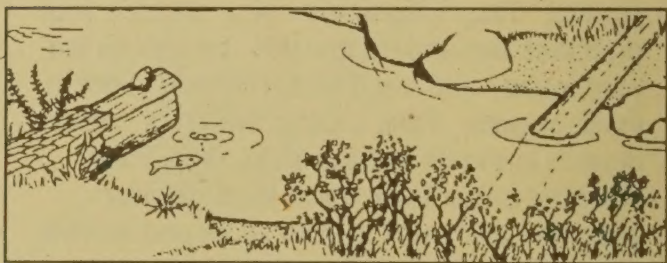


*Backswimmer*



*Caddisfly larva-  
in sand or twig  
"house"*

The branches and dead trees in the creek help to improve fish habitat. As the branches decompose, they provide food for the insects that fish eat. The branches also provide resting and hiding places for the fish.



Notice the temperature here. Is it warmer or cooler near the creek than away from the creek? Climate is an important element of an ecosystem. The Rock Creek area has a unique microclimate. It is slightly colder than the surrounding canyons. Several plants found near here are representative of plants from farther north. The clustered lady slipper orchid which can be found along the Rock Creek Road and the twin flower found along the trail are examples of plants that live in cooler areas.



**14.** Diversity of both plant and animal life is critical for a healthy ecosystem. Can you identify 5 different plants or trees here? Can you think of reasons why different types of trees are important?

This spot is a good place to put the pieces of this ecosystem study together. Think about the different elements of the Rock Creek Trail: the trees, lichen, insects, fungi, air, water, soil, etc. Think about how these interact with each other. Every aspect of the forest affects something or someone else. Imagine a connecting thread, like a spiderweb, tying the creek to the trees; the trees to the soil; the soil to the plants; the plants to the animals; the animals to the creek. Think about the ways in which they are interacting with each other to create an ecosystem. Can you now better understand an ecosystem?

Ecosystems are very complex. Scientists are still learning how these function. In the National Forests, interrelationships among and within ecosystems and how people use these are important. New research programs are aimed at learning more about ecosystems, and how we can better protect the health and productivity of the forests.

This is the last stop along the trail. As you walk back to the trailhead can you find something interesting to point out to a friend?

We hope you have enjoyed this hike along Rock Creek. For more information on Tahoe National Forest, stop by the Nevada City Ranger District/Forest Headquarters:  
631 Coyote Street,  
Nevada City, 95959  
or call (916) 265-4531.

**If you do not wish to keep this guide, please return it to the box at the trailhead for others to use.**





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